Comparison of the Cost Budget Plan and the Implementation Budget Plan (Cast In Indonesian's Border Area)

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Abstract. In project implementation, it is also known as the Implementation Budget Plan. The Implementation Budget Plan is a real cost that is used during the course of the project until the activity is completed. So with the calculation of the RAP before submitting a tender, the contractor can estimate the total value of the bid price on a project so that the costs offered are not too high and closer to the actual costs in the field. There is a cost difference between the budget plan and the implementation budget plan (real costs). The formulation of the problem that will be discussed in writing this final project is: how big is the difference in the cost of the work of the Sebatik Fisheries Laboratory Installation between the implementing budget plan and the cost budget plan? Meanwhile, the purpose of this final project is to analyze the difference between the cost budget plan price and the implementing budget plan price. As obtained from the results of the calculation of the budget plan, it is Rp. 286,584,560,28, and for the implementation budget plan, it is Rp. 187.338.959,83. The magnitude of the difference obtained is Rp. 99.245.600,46.

Keywords: Budget plan, cost, Indonesian Border Area

1. Introduction

Humans need Indonesia is a country rich in natural resources. It is not wrong if Indonesia is also called a maritime country, which refers to the area of Indonesian waters that exceeds the area of land. Because of this, quite a few Indonesian citizens choose the profession of fishing in the ocean. Apart from that, Indonesia has a total of 17,162 thousand small islands. Kalimantan Island is one of the islands in Indonesia that has many small islands. Of the 5 provinces in Kalimantan, one of them is North Kalimantan. This province is located on the Indonesian-Malaysian border. In North Kalimantan, there is an island that borders Malaysia directly, namely Sebatik Island. Sebatik Island is a small island located in the outermost area of Indonesia. The position of Sebatik Island is very strategic and it is an integrated marine and fisheries center. Sebatik Island has the potential to be developed as a fisheries-resource-based area, so investment opportunities are still wide open. By seeing this potential, many construction projects are carried out in Sebatik to support the community's economy,

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such as the construction of markets, factories, docks, and ports. Implementation of this construction project must consider many factors so that it can be implemented well, including the cost factor. In implementing a construction project, there are two types of costs: the implementation budget plan and the cost budget plan. The Implementation Budget Plan is the cost used by the contractor during project implementation until the activities are completed. The Cost Budget Plan is a detailed cost estimate prepared for the needs of the procurement sector, such as development or construction. By calculating The Implementation Budget Plan before submitting a tender, contractors can estimate the total value of the bid price for a project so that the offered costs are not too high and are closer to the actual costs in the field. The Cost Budget Plan and the Implementation Budget Plan have differences in costs for each work item, so a comparative analysis study is needed between the Cost Budget Plan and the Implementation Budget Plan . With that in mind, the author is interested in conducting comparative research on the implementation budget plan and cost budget plan for the construction of the Sebatik District Fisheries Laboratory Installation to find out how big the difference between the cost budget plan and the implementation budget plan is.

2. Method

To carry out this research, qualitative, quantitative, and participatory methods were used. The quantitative method involves distributing questionnaires containing previously prepared questions, while the qualitative method involves asking questions directly and having them answered directly by the correspondent, as well as making observations in the field. Data collection is carried out at project locations and agencies. The data needed for this research are:

- Primary data is data obtained from direct observations in the field by means of interviews and field observations. The primary data required is:
- Data on unit prices for materials in the field obtained from building stores.
- The craftsman's wage prices were obtained based on the results of direct interviews with the craftsmen.
- Photo of the project location

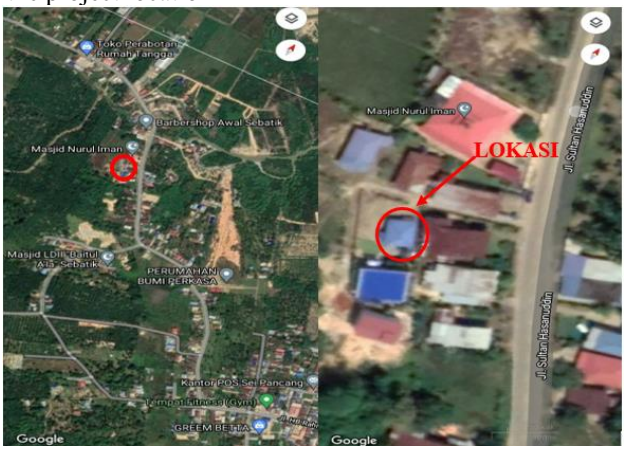

Fig 1. research location map

2.1 Secondary data, is data obtained from agencies related to this research.

The secondary data required is:

- Project plan drawing.
- Budget plan.
- Unit price of work.
- Unit prices for materials are based on SNI.

After obtaining primary data and secondary data, data analysis was then carried out. At this stage, data analysis to calculate The Cost Budget Plan is carried out based on the following stages:

1. Prepare Detailed Working Drawings (DED)
2. Calculating the Volume of Work
3. Create and Determine the Unit Price of Work
4. Calculate the Total Job Costs
5. Calculate the total number of each sub-job
6. Analyze the cost budget plan with stages:
   - Make a list of unit prices for materials and a list of unit prices for wages.
   - Calculating the unit price of materials = Material unit price × material coefficient value
   - Calculating the unit price of work wages = Wage unit price × labor wage coefficient value
   - Unit price of work = Volume × (amount of materials + amount of labor)

And data analysis to calculate The Implementation Budget Plan is carried out based on the following stages:

1. Calculate the type of work
2. Calculate the volume quantity of the type of work
3. Calculate the unit price for each type of work
4. Create a BQ (Bill of Quantity)
5. Add up all the work costs, nominal project costs, namely:
   - Direct costs are costs that are directly related to the construction being built.
   - Indirect costs are costs that are not directly related to construction, but must be present and cannot be removed from the project.

The stages above can be seen in the flow chart as follows:

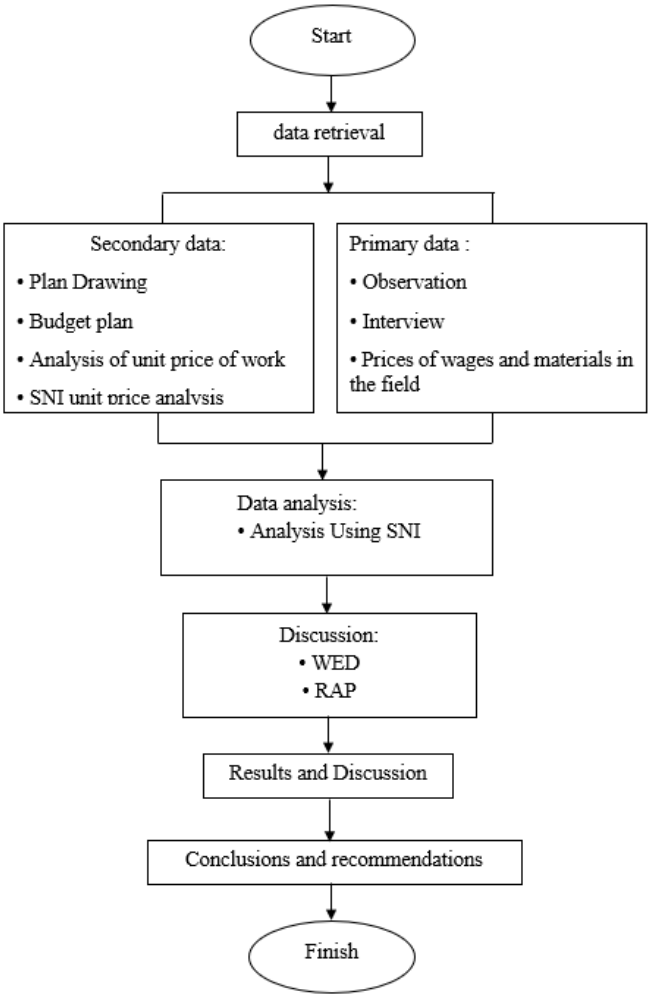

Fig 2. Research methodology flowchart

3. Results And Discussion

Below, we will discuss the cost budget plan and implementation budget plan for the construction of fisheries laboratory installations. The data required is the volume of all work items from initial work to final work. The results of the volume calculation will be multiplied by the results of the unit price analysis, which consists of material prices and work wages. The process of analyzing cost budget plans and implementation budget plans is carried out using the same process, but the difference is the suggested price used.The steps are as follows:

3.1 Cost Budget Plan

- Calculating the volume of work
  Calculating the volume of work is done by looking at the work drawings that have been made by the planning consultant. Getting an accurate volume is largely determined by how detailed the planning drawing is. The following is an example of a work volume table.

No	Uraian Pekerjaan	Satuan	Volume
1	2	3	4,00
I	**PEKERJAAN PERSIAPAN**		
1	Pembersihan Lahan	M^2	200,00
2	Pemasangan Bouwplank	M^1	36,00
3	Penyediaan Air Kerja	LS	1,00
4	Administrasi & Dokumentasi	LS	1,00
II	**PEKERJAAN GALIAN TANAH & URUGAN**		
1	Galian Tanah Pondasi	M^3	30,71
2	Urugan Tanah Kembali	M^3	26,88
3	Urugan Pasir Dibawah Pondasi	M^3	2,03
4	Urugan Pasir Dibawah Lantai	M^3	4,80
III	**PEKERJAAN PASANGAN DAN PLESTERAN**		
1	Pasangan Batu Kosong/Aanstamping	M^3	6,08
2	Pasangan Pondasi Batu Gunung	M^3	18,00
3	Pasangan Batu Bata	M^2	160,41
4	Plesteran Dinding	M^2	320,81
5	Acian Dinding	M^2	320,81

Fig 3. Volume of Work

- Unit Prices of Wages and Materials
  For the price of materials and wages using the year 2021, it is obtained from the unit price for construction work planning for North Kalimantan Province, DPUPR-PKPP Nunukan Office.

No.	Tenaga Kerja	Kode	Satuan	Harga Satuan (Rp.)	
				Jam	Hari
1	Pekerja	L.01	OH	Rp. 15.600,00	Rp. 125.000,00
2	Pekerja Anyam	L.01	OH	Rp. 15.600,00	Rp. 125.000,00
3	Pekerja Pengisi Batu	L.01	OH	Rp. 15.600,00	Rp. 125.000,00
4	Tukang	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
5	Tukang Gali	L.02	OH	Rp. 15.600,00	Rp. 125.000,00
6	Tukang Batu	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
7	Tukang Kayu	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
8	Tukang Besi	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
9	Tukang Besi Konstruksi	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
10	Tukang Alumunium	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
11	Tukang Cat	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
12	Tukang Pipa	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
13	Tukang Pengayam Bronjong	L.02	OH	Rp. 18.700,00	Rp. 150.000,00
14	Tukang Tebas	L.02	OH	Rp. 15.600,00	Rp. 125.000,00
15	Tukang Vibrator	L.02	OH	Rp. 18.700,00	Rp. 150.000,00

Fig 4. Unit Prices of Wages

No.	Bahan	Satuan	Harga Satuan (Rp.)	
1	Air	Liter	Rp	75
2	Air Kerja	Liter	Rp	75
3	Air test (air bersih)	m3	Rp	35.000
4	Air Bersih / PDAM	Liter	Rp	3.500
5	Akustik 60 x 120	Lembar	Rp	157.440
6	Akustik ukuran 30 x 30 cm	Lembar	Rp	42.700
7	Akustik ukuran 30 x 60 cm	Lembar	Rp	65.450
8	Alang-alang	Ikat	Rp	680
9	Aluminium Composite Panel	Lbr	Rp	384.810
10	Aluminium strip	m	Rp	28.930
11	Alumunium foil	M2	Rp	32.890
12	Alumunium gel tbl 0,55	Lbr	Rp	171.100
13	Ampelas	Lbr	Rp	8.260

Fig 5. Unit Prices of Materials

- Unit price analysis

  To calculate the cost budget, a unit price analysis is needed, which refers to the Indonesian National Standard (SNI) regarding how to calculate the unit price of work for building and housing construction. This standard determines the coefficient or index of building materials and the labor index for each unit of work. In addition, the basic unit price in this calculation refers to the SNI from the Ministry of Public Works for the Job Creation Sector, Cost Budget Plan.

No	Uraian	Satuan	Koefisien	Harga Satuan (Rp.)	Jumlah Harga (Rp.)
A	TENAGA				
	Pekerja	OH	0,1000	125.000	12.500,00
	Tukang Kayu	OH	0,1000	150.000	15.000,00
	Kepala Tukang	OH	0,0100	165.000	1.650,00
	Mandor	OH	0,0050	170.000	850,00
	JUMLAH TENAGA KERJA				30.000,00
B	BAHAN				
	Kayu balok 5/7	m3	0,0120	6.765.000	81.180,00
	Paku 2"-3"	Kg	0,0200	27.970	559,40
	Kayu papan 3/20	m3	0,0070	4.165.000	29.155,00
	JUMLAH HARGA BAHAN				110.894,40
C	PERALATAN			-	-
	JUMLAH HARGA ALAT				-
D	Jumlah (A+B+C)			-	140.894,40
E	Overhead & Profit 10%		10%		14.089,44
F	Harga Satuan Pekerjaan (D+E)			-	154.983,00

Fig 6. Unit price analysis

- Cost-Budget Plans.

  The calculation of the cost budget plan is to multiply the volume of work by analyzing the unit price of work. The following is a table of cost-budget plans.

No	Uraian Pekerjaan	Satuan	Volume	Harga (Rp)	
				Satuan (Rp)	Jumlah (Rp)
1	2	3	4	5	6 = 4x5
I	**PEKERJAAN PERSIAPAN**				
1	Pembersihan Lahan	M^2	200	Rp 23.100	Rp 4.620.000
2	Pemasangan Bouwplank	M^1	36	Rp 154.983	Rp 5.579.388
3	Penyediaan Air Kerja	LS	1	500000	Rp 500.000
4	Administrasi & Dokumentasi	LS	1	500000	Rp 500.000
				Jumlah I	Rp 11.199.388
II	**PEKERJAAN GALIAN TANAH & URUGAN**				
1	Galian Tanah Pondasi	M^3	30,7125	Rp 107.800	Rp 3.310.808
2	Urugan Tanah Kembali	M^3	26,8781	Rp 39.050	Rp 1.049.591
3	Urugan Pasir Dibawah Pondasi	M^3	2,025	Rp 440.426	Rp 891.863
4	Urugan Pasir Dibawah Lantai	M^3	4,8	Rp 440.426	Rp 2.114.045
				Jumlah II	Rp 7.366.306
III	**PEKERJAAN PASANGAN & PLESTERAN**				
1	Pasangan Batu Kosong/Aanstamping	M^3	6,075	Rp 885.381	Rp 5.378.690
2	Pasangan Pondasi Batu Gunung	M^3	18	Rp 1.467.001	Rp 26.406.018
3	Pasangan Batu Bata	M^2	160,405	Rp 178.223	Rp 28.587.860
4	Plesteran Dinding	M^2	320,81	Rp 89.498	Rp 28.711.853
5	Acian Dinding	M^2	320,81	Rp 54.406	Rp 17.453.989
				Jumlah III	Rp 106.538.410

Fig 7. Cost-Budget Plans.

- Recapitulation
  Recapitulation is a total cost calculation obtained from the results of the overall cost calculations required in calculating the project budget plan.

No.	U R A I A N P E K E R J A A N	JUMLAH BIAYA (Rp.)
I	PEKERJAAN PERSIAPAN	6.131.952,00
II	PEKERJAAN PONDASI	23.722.382,00
III	PEKERJAAN BETON	55.834.101,72
IV	PEKERJAAN DINDING	31.233.860,39
V	PEKERJAAN LANTAI KERAMIK	22.561.868,96
VI	PEKERJAAN ATAP,PLAFOND & PARTISI	88.124.644,69
VII	PEKERJAAN KUSEN, PINTU DAN JENDELA	27.715.270,65
VIII	PEKERJAAN KUNCI & PENGGANTUNG	9.104.200,75
IX	PEKERJAAN LISTRIK	5.218.500,00
X	PEKERJAAN PENGECATAN DAN FINISHING	16.937.779,13
	JUMLAH KESELURUHAN	**286.584.560,28**
	PPN 10 %	**28.658.456,03**
	PPN 10 % + JUMLAH TOTAL	**315.243.016,31**
	DIBULATKAN	**315.243.000,00**

Fig 8. Recapitulation

3.2 Implementation Budget Plan

- On calculating the volume of work
  For the volume, The Cost Budget Plan data has been obtained, created by the project owner.
- Unit Prices of Wages and Materials

For material prices, a direct survey was carried out based on material unit price data obtained directly from building stores. Meanwhile, wage price data has been obtained from interviews with craftsmen in the Nunukan district area.

- Unit price analysis
  The calculation of work unit price analysis refers to the Indonesian National Standard (SNI) regarding how to calculate work unit prices for building and housing construction. This standard determines the coefficient or index of building materials and the labor index for each unit of work. In addition, the basic unit price in this calculation refers to the SNI from the Ministry of Public Works for the Job Creation Sector, Cost Budget Plan.
- Implementation Budget Plan
  Calculation of the Implementation The budget plan is to multiply the volume of work by analyzing the unit price of work. And include indirect costs. Indirect costs are production costs that are not part of manufacturing, cannot be linked and charged directly to production units, and are accurately traced to cost objects. Examples of indirect costs are salaries, administrative costs, transportation costs, field supervisors, and consumption.
- Recapitulation
  Recapitulation is a total cost calculation obtained from the results of the overall cost calculations required in calculating the project budget plan.

3.3 Comparison

From the recapitulation calculation, the total cost calculation obtained from the results of the overall cost calculation is Rp. 286,584,560.28, while the The Implementation Budget Plan is Rp. 187,338,959.83. For comparison between the two, the difference is Rp. 99,245,600.46. The comparison can be seen in the following table:

NO	URAIAN PEKERJAAN	JUMLAH BIAYA RAB	JUMLAH BIAYA RAP
I	PEKERJAAN PERSIAPAN	6.131.952,00	3.811.400,00
II	PEKERJAAN PONDASI	23.722.382,00	21.450.321,60
III	PEKERJAAN BETON	55.834.101,72	34.612.727,59
IV	PEKEKRJAAN DINDING	31.233.860,39	19.672.269,00
V	PEKERJAAN LANTAI KERMIK	22.561.868,96	25.543.886,00
VI	PEKERJAAN ATAP,PLAFOND & PARTISI	88.124.644,69	48.419.522,00
VII	PEKERJAAN KUSEN, PINTU DAN JENDELA	14.839.998,00	14.839.998,00
VIII	PEKERJAAN KUNCI & PENGGANTUNG	9.104.200,75	5.229.700,00
IX	PEKERJAAN LISTRIK	5.218.500,00	2.904.000,00
X	PEKERJAAN PENGECATAN DAN FINISHING	16.937.779,13	10.855.135,63
	JUMLAH KESELURUHAN	**286.584.560,28**	**187.338.959,83**
	PPN 10%	28.658.456,03	18.733.895,98
	PPN 10% + JUMLAH TOTAL	315.243.016,31	206.072.855,81
	DIBULATKAN	315.243.000,00	206.072.000,00
	SELISIH RAP DAN RAB		99.245.600,46

Fig 9. Recapitulation

Conclusion

In The Implementation Budget Plan and The Cost Budget Plan calculations, they both have an inseparable connection. Because The Implementation Budget Plan itself is an elaboration of The Cost Budget Plan, The results are as follows:

1. As obtained from the calculation results of the budget plan, the costs obtained are Rp. 286,584,560.28, and for the implementation budget plan, they are Rp. 187,338,959.83.
2. The amount of the difference obtained is Rp 99,245,600.46.
3. Factors that influence the differences in The Cost Budget Plan and The Implementation Budget Plan calculations are:
   a. Material Prices
   b. Workers' Wages
   c. Indirect costs are displayed in the The Implementation Budget Plan.

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References

1. Pekerjaan, Tim Umum. Daftar Standar Harga Satuan Pekerjaan (HSPK). Kalimantan Barat, 2021.
2. Sugiyono.: (2020). Metode Penelitian Kuantitatif Kualitatif dan R&D. Bandung: Alfabeta, (2020).
3. Ibrahim, H. Bachtiar.: Rencana Dan Estimate Real Of Cost. Cetakan ke-2. Jakarta: Bumi Aksara, 1993.
4. Virginia Marcelin Mokolensang.: Analisis Rencana Anggaran Biaya Pada Proyek Pembangunan Rumah Susun Papua 1 Di Distrik Muara Tami Kota Jayapura Provinsi Papua. Jurnal Sipil Statik Vol.9 No.4, 2021.
5. Pebi Mahar Ramadhan dan SaihulAnwar.: Analisis Manajemen Konstruksi Pada Jembatan Cikeusal. Jurnal Konstruksi dan Infrastruktur. Vol.X No.1, 2022.
6. Iman, Soeharto.: Manajemen Proyek, Jakarta : Erlangga, 1995.
7. Fajar, M.: Analisis Perbandingan Harga Satuan Pekerjaan Metode AHSP dan Metode Aktual. Skripsi. Fakultas Teknik. Universitas Sumatera Utara: Medan, 2019.